



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/045,883	01/09/2002	Sanjaya Kumar	ANDIP007	1172
22434	7590	01/10/2008	EXAMINER	
BEYER WEAVER LLP P.O. BOX 70250 OAKLAND, CA 94612-0250			SERRAO, RANODHI N	
		ART UNIT	PAPER NUMBER	
		2141		
		MAIL DATE	DELIVERY MODE	
		01/10/2008	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/045,883	KUMAR ET AL.	
	Examiner	Art Unit	
	Ranodhi Serrao	2141	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 15 November 2007.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1,3-29,31-40 and 42-58 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1,3-29,31-40 and 42-58 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
 - 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 - 3) Information Disclosure Statement(s) (PTO/SB/08)

Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)

Paper No(s)/Mail Date _____
 - 5) Notice of Informal Patent Application
 - 6) Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1, 3-29, 31-40, and 42-58 have been considered but are moot in view of the new ground(s) of rejection.
2. The applicant argued in substance the newly added limitations of the independent claims. However, the new grounds teach these and the added features. See below rejections.
3. Applicant further argued the rejection of claims that are unpatentable over Terrell et al. However, these arguments are moot in view of the new ground(s) of rejection.
4. With reference to Blumenau, applicant remarked,

Moreover, the cited references, separately or in combination, fail to support the dynamic implementation of virtualization of storage within a storage area network through the use of a virtualization message, as claimed. In fact, as set forth in col. 24, lines 25-33 of Blumenau, the "port adapter providing the physical port is programmed to function as an FL_Port, E_Port or F_Port..." However, the instruction of a physical port to function on behalf of a virtual port as set forth in Blumenau is not dynamic. Rather, the physical port is merely programmed to operate in this manner. There is nothing to indicate that such programming refers to the dynamic sending of messages. As such, Blumenau teaches away from the dynamic implementation of virtualization of storage within a storage area network through the use of a virtualization message.
5. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., dynamic implementation of virtualization of storage within a storage area network through the use of a virtualization message) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the

Art Unit: 2141

specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

6. Moreover, applicant stated,

While Blumenau requires that a host be associated with one or more virtual ports (for volume partitioning), the claimed invention creates a virtual enclosure that may access the virtual storage units. As such, combining the cited references would fail to operate in the claimed manner.

7. The examiner points out that in col. 37, lines 35-47, Blumenau states, "The host user can create one set of allocated volumes for each host controller port residing on the host." Therefore, the Blumenau teaches creates a virtual enclosure (host) that may access the virtual storage units (allocated volumes).

8. The examiner points out that the pending claims must be "given the broadest reasonable interpretation consistent with the specification" [*In re Prater*, 162 USPQ 541 (CCPA 1969)] and "consistent with the interpretation that those skilled in the art would reach" [*In re Cortright*, 49 USPQ2d 1464 (Fed. Cir. 1999)]. In conclusion, upon taking the broadest reasonable interpretation of the claims, the cited references teach all of the claimed limitations. See below.

Specification

9. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: See below rejection under 35 U.S.C. 112, first paragraph.

Claim Rejections - 35 USC § 112

10. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

11. Claim 55 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 55 recites a method as recited in claim 1, wherein each of the virtual ports is **not related** to the associated port by a virtual-to-physical address mapping. Emphasis added. There is no description or indication in the instant application's specification that each of the virtual ports is not related to the associated port by a virtual-to-physical address mapping.

Claim Objections

12. Claim 42 is objected to because of the following informalities: Claim 42 depends on cancelled claim 41. Appropriate correction is required.

Claim Rejections - 35 USC § 102

13. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Art Unit: 2141

14. Claims 1, 3, 4, 7-14, 19, 21, 22, 43, 46, 49, 53, and 55-58 are rejected under 35 U.S.C. 102(e) as being anticipated by Blumenau et al. (6,260,120).

15. As per claim 1, Blumenau et al. teaches a method of implementing storage virtualization in a storage area network (col. 8, lines 5-10), the method comprising: creating a virtual enclosure, the virtual enclosure being a virtual entity having one or more virtual ports and being adapted for representing one or more virtual storage units, each of the virtual storage units representing one or more physical storage locations on one or more physical storage units of the storage area network (col. 24, line 56-col. 25, line 28; wherein virtual entity is reasonably interpreted as a Fibre Channel network); associating each of the virtual ports of the virtual enclosure with a port of a network device within the storage area network (col. 18, lines 8-34), thereby enabling one or more network devices within the storage area network to be associated with the virtual ports (col. 25, lines 8-28); and assigning an address or identifier to each of the virtual ports (col. 11, line 58-col. 12, line 8); wherein associating each of the virtual ports of the virtual enclosure with a port of a network device within the storage area network (col. 24, line 51-col. 25, line 7 and col. 25, lines 29-49) includes sending a message from a first network device to a port of a second network device within the storage area network to instruct the port of the second network device to handle messages addressed to the address or identifier assigned to the associated virtual port that are received by the port of the second network device subsequent to the message sent by the first network device such that the first network device instructs the port of the

second network device to act on behalf of the virtual port (col. 41, line 54-col. 42, line 20).

16. As per claim 3, Blumenau et al. teaches a network device, wherein the storage area network is a virtual storage area network (see Blumenau et al., column 24, lines 31-55).

17. As per claim 4, Blumenau et al. teaches a network device, wherein a Node World Wide Name is associated with the virtual enclosure (see Blumenau et al., column 11, lines 15-24).

18. As per claim 7, Blumenau et al. teaches a network device, wherein an FCID is assigned to each of the virtual ports (see Blumenau et al., column 28, lines 33-51).

19. As per claim 8, Blumenau et al. teaches a method, further comprising: selecting a number of virtual enclosure ports to be included in the virtual (see Blumenau et al., column 24, lines 10-33).

20. As per claim 9, Blumenau et al. teaches a network device, wherein the number of virtual ports of the virtual enclosure is greater than a number of ports of each network device within the storage area network (see Blumenau et al., column 18, lines 8-34).

21. As per claim 10, Blumenau et al. teaches a method, wherein associating each of the virtual ports of the virtual enclosure with a port of a second network device within the storage area network comprises: associating the virtual ports with ports of one or more network devices within the storage area network (see Blumenau et al., column 25, lines 29-49).

Art Unit: 2141

22. As per claim 11, Blumenau et al. teaches a network device, wherein associating each of the virtual ports of the virtual enclosure with a port of a network device within the storage area network comprises: sending a bind message to a port of a network device within the storage area network (see Blumenau et al., col. 24, lines 10-33), thereby binding the port of a network device within the storage area network to one or more of the virtual ports (see Blumenau et al., column 10, lines 42-67).

23. As per claim 12, Blumenau et al. teaches a network device, further comprising: sending a trap message to one or more additional ports of one or more network devices within the storage area network (see Blumenau et al., col. 41, lines 22-53), thereby instructing the one or more additional ports of one or more network devices within the storage area network to trap messages directed to one of the virtual ports (see Blumenau et al., column 41, lines 8-21).

24. As per claim 13, Blumenau et al. teaches a network device, wherein one or more of the virtual storage units each comprises a VLUN or other virtual representation of storage on the storage area network (see Blumenau et al., column 24, lines 34-55 and column 43, lines 1-21).

25. As per claim 14, Blumenau et al. teaches a method, farther comprising: assigning one or more virtual storage units to the virtual enclosure (see Blumenau et al., column 24, lines 34-55).

26. As per claim 19, Blumenau et al. teaches a method of performing LUN mapping in a storage area network, the method comprising: accessing a LUN mapping table having one or more entries (col. 7, lines 9-11), each of the entries identifying an initiator

in the storage area network, one or more of a set of one or more virtual ports of a virtual enclosure, and associating a specified logical unit with one or more virtual storage units (col. 27, lines 23-38), each of the virtual storage units representing one or more physical storage locations on one or more physical storage units of the storage area network (col. 24, lines 10-33), wherein the virtual enclosure is a virtual entity adapted for representing the set of one or more virtual storage units (col. 24, lines 34-55) and each of the virtual ports is associated with a port of a network device within the storage area network (col. 24, lines 10-33), wherein the port of the network device has received a message from another network device instructing the port to handle messages addressed to the associated virtual port (col. 25, lines 29-49) that are received by the port of the network device subsequent to the message sent by the another network device such that the another network device instructs the port of the network device to act on behalf of the virtual port (col. 41, line 54-col. 42, line 20); and when a request for the specified logical unit is received from the initiator via one of the associated virtual ports, identifying one of the entries in the LUN mapping table and employing the one or more virtual storage units specified in the entry to service the request (col. 29, lines 43-56).

27. As per claim 21, Blumenau et al. teaches in a first network device, a method of implementing storage virtualization in a storage area network, the method comprising: sending a virtualization message to a port of a second network device within the storage area network, the virtualization message instructing the port to handle messages addressed to a virtual port of a virtual enclosure, the virtual enclosure being a virtual

Art Unit: 2141

entity having one or more virtual ports and being adapted for representing one or more virtual storage units (col. 25, lines 29-49 and col. 41, line 54-col. 42, line 20), each of the virtual storage units representing one or more physical storage locations on one or more physical storage units of the storage area network, wherein the virtualization message indicates that the port is to handle messages addressed to an address or identifier assigned to the virtual port that are received by the port of the second network device subsequent to the virtualization message sent by the first network device such that the first network device instructs the port of the second network device to act on behalf of the virtual port (col. 25, lines 8-28); and receiving a virtualization response from the port of the second network device in response to the virtualization message (col. 25, lines 50-67).

28. As per claim 22, Blumenau et al. teaches a method, wherein the virtual enclosure port is identified by a NWWN and a PWWN (column 12, lines 27-54).

29. As per claim 43, Blumenau et al. teaches a method, further comprising: handling messages addressed to the address or identifier assigned to the virtual port (see Blumenau et al., column 16, line 60-column 17, line 19).

30. As per claim 46, Blumenau et al. teaches a method, further comprising: receiving a report message requesting an identification of one or more of the virtual storage units supported by an address or identifier assigned to one of the virtual ports (see Blumenau et al., column 12, lines 27-54); sending a reply message identifying one or more of the virtual storage units (see Blumenau et al., column 25, lines 50-67).

31. As per claim 49, Blumenau et al. teaches a method, wherein the one or more of the virtual storage units identified in the reply message are those virtual storage units that are visible to an initiator sending the report message (see Blumenau et al., column 25, lines 50-67).
32. As per claim 53, Blumenau et al. teaches a method, wherein creating a virtual enclosure comprises: receiving a selection of a number of virtual ports to be included in the virtual enclosure (col. 24, lines 34-55).
33. As per claim 55, Blumenau et al. teaches a method, wherein each of the virtual ports is not related to the associated port by a virtual-to-physical address mapping (col. 26, line 58-col. 27, line 8).
34. As per claim 56, Blumenau et al. teaches a method, wherein associating each of the virtual ports of the virtual enclosure with a port of a network device within the storage area network comprises: associating the virtual ports with ports of two or more network devices within the storage area network (col. 24, lines 34-55).
35. As per claim 57, Blumenau et al. teaches a method, further comprising: associating a single one of the virtual ports with at least one of the ports (col. 27, lines 23-38).
36. As per claim 58, Blumenau et al. teaches a method, further comprising: associating a single one of the virtual ports with two or more of the ports of the two or more network devices (col. 27, lines 39-53).

37. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

38. Claims 5-6 rejected under 35 U.S.C. 103(a) as being unpatentable over Blumenau et al. as applied to claims 1 and 4 above, and further in view of Terrell et al. (2003/0210686).

39. As per claim 5, Blumenau et al. and Terrell et al. teach the mentioned limitations of claims 1 and 4 above but Blumenau et al. fails to teach a network device, wherein a Port World Wide Name is assigned to each of the virtual ports such that the Port World Wide Name is associated with an associated port of a network device within the storage area network. However, Terrell et al. teaches a network device, wherein a Port World Wide Name is assigned to each of the virtual ports such that the Port World Wide Name is associated with an associated port of a network device within the storage area network (see Terrell et al., ¶ 96). It would have been obvious to one having ordinary skill in the art at the time of the invention to modify Blumenau et al. to a network device, wherein a Port World Wide Name is assigned to each of the virtual ports such that the Port World Wide Name is associated with an associated port of a network device within the storage area network in order to develop routing information between physical entities by routers without user intervention (see Terrell et al., ¶ 97).

40. As per claim 6, Blumenau et al. and Terrell et al. teach the mentioned limitations of claim 1 above but Blumenau et al. fails to teach a network device, wherein the port of the second network device within the storage area network is a port of a fibre channel device. However, Terrell et al. teaches a network device, wherein the port of the second

Art Unit: 2141

network device within the storage area network is a port of a fibre channel device (see Terrell et al., ¶ 217). It would have been obvious to one having ordinary skill in the art at the time of the invention to modify Blumenau et al. to a network device, wherein the port of the second network device within the storage area network is a port of a fibre channel device in order to implement storage virtualization by receiving a frame from the network, determining by parsing the frame, the protocol and logical unit number, and routing the frame to a queue according to a traffic class associated with the logical unit number in routing information prepared for the processors (see Terrell et al., abstract).

41. Claims 23-28, 37, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blumenau et al. and Terrell et al.
42. As per claims 23-28, 37, and 39, the above-mentioned motivation of claims 5-6 applies fully in order to combine Blumenau et al. and Terrell et al.
43. As per claim 23, Blumenau et al. and Terrell et al. teach an apparatus, wherein the virtualization response indicates that the port is configured to handle messages addressed to the virtual port of the virtual enclosure (see Terrell et al., ¶ 25).
44. As per claim 24, Blumenau et al. and Terrell et al. teach an apparatus, wherein the virtualization message indicates that the port is to obtain an address or identifier assigned to the virtual port (see Terrell et al., ¶ 25).
45. As per claim 25, Blumenau et al. and Terrell et al. teach an apparatus, wherein the virtualization message is a bind message or a trap message (see Blumenau et al., column 11, lines 41-57).

Art Unit: 2141

46. As per claim 26, Blumenau et al. and Terrell et al. teach an apparatus, wherein the virtualization response comprises the address or identifier assigned to the virtual port (see Blumenau et al., column 11, line 58-column 12, line 8).

47. As per claim 27, Blumenau et al. and Terrell et al. teach an apparatus, wherein the virtualization message indicates that the port is to obtain an address or identifier assigned to the virtual enclosure port from a DNS server (see Terrell, ¶ 96).

48. As per claim 28, Blumenau et al. and Terrell et al. teach a method, further comprising: receiving an address or identifier assigned to the virtual port (see Blumenau et al., column 12, lines 27-54).

49. As per claim 37, Blumenau et al. and Terrell et al. teach a method, further comprising: obtaining and storing the address or identifier assigned to the virtual port (see Blumenau et al., column 12, lines 27-54).

50. As per claim 39, Blumenau et al. and Terrell et al. teach a method, further comprising: sending the address or identifier assigned to the virtual port (see Blumenau et al., column 12, lines 27-54).

51. Claim 54 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blumenau et al. as applied to claim 1 above, and further in view of Selkirk et al. (2002/0053009). Blumenau et al. teaches the mentioned limitations of claim 1 above but fails to teach a method, wherein the virtual enclosure is configured to represent the one or more virtual storage units. However, Selkirk et al. teaches a method, wherein the virtual enclosure is configured to represent the one or more virtual storage units (see

Art Unit: 2141

Selkirk et al., ¶ 76-77). It would have been obvious to one having ordinary skill in the art at the time of the invention to modify Blumenau et al. to a method, wherein the virtual enclosure is configured to represent the one or more virtual storage units in order to support dynamically changeable virtual mapping schemes in a data processing system (see Selkirk et al., abstract).

52. Claims 15-18, 20, 29, 31-36, 38, 40, 42, 44, 45, 47, 48, and 50-52 have similar limitations as to claims 1, 3-14, 19, 21-28, 37, 39, 43, 46, 49, and 53-58 above; therefore, they are being rejected under the same rationale.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 2141

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ranodhi Serrao whose telephone number is (571)272-7967. The examiner can normally be reached on 8:00-4:30pm, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rupal Dharia can be reached on (571)272-3880. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RNS

R.N.S.

12/11/2007

WILLIAM VAUGHN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100